

### **REMARKS**

The Office Action dated July 13, 2005 has been received and carefully noted. The above new claims and the following remarks, are submitted as a full and complete response thereto.

In accordance with the foregoing, claims 22-29 have been added. No new matter is being presented, and approval and entry are respectfully requested. As will be discussed below, it is also requested that all of claims 1-10 and 15-17 and 20-29 be found allowable as reciting patentable subject matter.

The Applicants wish to thank the Examiner for indicating allowable subject matter in claims 11-14.

Claims 1-17 and 20-29 are pending and under consideration.

### **REJECTION UNDER 35 U.S.C. § 103:**

*In the Office Action, at page 2, claims 1-10, 15-17, and 20-21 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,349,091 to Li ("Li") and U.S. Patent No. 6,137,802 to Jones et al. ("Jones"). The Office Action took the position that Li and Jones disclose all the aspects of dependent claims 1-10, 15-17, and 20-21. The rejection is traversed and reconsideration is requested.*

Independent claim 1, upon which claims 2, 3, 4, and 21 are dependent, recites a wireless access network for providing radio communication of data therein. The wireless

access network includes a first-tier mesh formed of a plurality of first-tier nodes, each of the first-tier nodes of the plurality of first-tier nodes capable of communicating data with at least selected others of the first-tier nodes, at least one of the first-tier nodes forming a first-tier sink node. The wireless access network also includes at least a second-tier mesh formed of a plurality of second-tier nodes, each of the second-tier nodes of the plurality of second-tier nodes capable of communicating data with at least selected others of the second-tier nodes, at least one of the second-tier nodes forming a second-tier sink node, the second-tier sink node further capable of communicating with the first-tier sink node of the first-tier mesh.

Independent claim 5, upon which claims 6-7 are dependent, recites a wireless access network for providing radio communication of data therein. The wireless access network includes a first-tier mesh formed of a plurality of first-tier nodes, each of the first-tier nodes of the plurality of first-tier nodes capable of communicating data with at least selected others of the first-tier nodes, at least one of the first-tier nodes forming a first-tier sink node. The wireless access network also includes at least a second-tier mesh formed of a plurality of second-tier nodes, each of the second-tier nodes of the plurality of second-tier nodes capable of communicating data with at least selected others of the second-tier nodes, at least one of the second-tier nodes forming a second-tier sink node, the second-tier sink node further capable of communicating with the first-tier sink node of the first-tier mesh. The first-tier mesh comprises an ad-hoc mesh which exhibits an ad-hoc configuration and an ad-hoc number of first-tier nodes.

Independent claim 8, upon which claims 9-10 are dependent, recites a wireless access network for providing radio communication of data therein. The wireless access network includes a first-tier mesh formed of a plurality of first-tier nodes, each of the first-tier nodes of the plurality of first-tier nodes capable of communicating data with at least selected others of the first-tier nodes, at least one of the first-tier nodes forming a first-tier sink node. The wireless access network also includes at least a second-tier mesh formed of a plurality of second-tier nodes, each of the second-tier nodes of the plurality of second-tier nodes capable of communicating data with at least selected others of the second-tier nodes, at least one of the second-tier nodes forming a second-tier sink node, the second-tier sink node further capable of communicating with the first-tier sink node of the first-tier mesh. The second-tier mesh comprises a pre-configured mesh which exhibits a fixed configuration and a fixed number of second-tier nodes.

Independent claim 15, upon which claims 16-17 are dependent, recites a wireless access network for providing radio communication of data therein. The wireless access network includes a first-tier mesh formed of a plurality of first-tier nodes, each of the first-tier nodes of the plurality of first-tier nodes capable of communicating data with at least selected others of the first-tier nodes, at least one of the first-tier nodes forming a first-tier sink node. The wireless access network also includes at least a second-tier mesh formed of a plurality of second-tier nodes, each of the second-tier nodes of the plurality of second-tier nodes capable of communicating data with at least selected others of the second-tier nodes, at least one of the second-tier nodes forming a second-tier sink node,

the second-tier sink node further capable of communicating with the first-tier sink node of the first-tier mesh. The at least one of the first-tier nodes forming the first-tier sink node comprises a first first-tier node forming a first first-tier sink node and at least a second first-tier node forming a second first-tier sink node, wherein the at least one of the second-tier nodes forming the second-tier sink node comprises a first second-tier node forming a first second-tier sink node and at least a second, second-tier node forming a second second-tier sink node, the first first-tier sink node capable of communicating with the first second-tier sink node, the second first-tier sink node capable of communicating with the second second-tier sink node, and the first and second second-tier sink nodes, respectively, capable of communicating therebetween.

Independent claim 20 recites a method for providing for communication in a method for communicating data, and improvement of a method for forming a wireless access network providing for communication therein. The method includes forming a first-tier mesh of a plurality of first-tier nodes, each of the first-tier nodes capable of communicating data with at least selected others of the first-tier nodes, at least one of the first-tier nodes forming a first-tier sink node. The method also includes forming a second-tier mesh of a plurality of second-tier nodes, each of the second-tier nodes of the plurality of second-tier nodes capable of communicating data with at least selected others of the second-tier nodes, at least one of the second tier nodes forming a second-tier sink node further capable of communicating with the first-tier sink node of the first-tier mesh formed during the operation of forming the second-tier mesh.

Independent claim 22, upon which claim 23 is dependent, recites a first-tier sink node comprising at least one first-tier nodes, wherein the at least one first-tier nodes form a first-tier mesh, and the first-tier sink node communicates data with at least selected others of the at least one first-tier nodes and communicates data with a second-tier sink node of a second-tier network.

Independent claim 24, upon which claim 25 is dependent, recites a second-tier sink node comprising at least one second-tier nodes, wherein the at least one second-tier nodes form a second-tier mesh, and the second-tier sink node communicates data with at least selected others of the at least one second-tier nodes and communicates data with a first-tier sink node of a first-tier mesh.

Independent claim 26 recites a first-tier sink node, comprising at least one first-tier nodes, wherein the at least one first-tier nodes form a first-tier mesh; means for communicating data with at least selected others of the at least one first-tier nodes; and means for communicating data with a second-tier sink node of a second-tier network.

Independent claim 27 recites a second-tier sink node, comprising at least one second-tier nodes, wherein the at least one second-tier nodes form a second-tier mesh; means for communicating data with at least selected others of the at least one second-tier nodes; and means for communicating data with a first-tier sink node of a first-tier mesh.

Independent claim 28 recites a method for a first-tier sink node, comprising forming a first-tier mesh using at least one first-tier nodes; communicating data with at

least selected others of the at least one first-tier nodes; and communicating data with a second-tier sink node of a second-tier network.

Independent claim 29 recites a method for second-tier sink node, comprising forming a second-tier mesh using at least one second-tier nodes; communicating data with at least selected others of the at least one second-tier nodes; and communicating data with a first-tier sink node of a first-tier mesh.

As will be discussed below, Li and Jones fail to disclose or suggest the elements of any of the presently pending claims.

Li describes a wireless network 2 including a plurality of nodes 10 arranged in cells or clusters 12. Each cell or cluster includes corresponding cluster member nodes 10 with one of those cluster member nodes designated as a cluster head node or base station 14. See column 4, lines 1-5. These cluster arrangements form the first tier of network 2 and facilitate communication within a cluster between the cluster head and member nodes preferably utilizing a first transmission frequency. See column 4, lines 5-9. The head node of each cluster are in communication with each other, preferably utilizing a second transmission frequency essentially forming a second tier of network 2 and facilitates communications between nodes of different clusters. See column 4, lines 9-15.

Jones generally describes an ATM network as a backbone network 10 made up of a plurality of ATM switches such as ATM switch 12. See column 3, lines 10-20. A plurality of user devices 16, 18, 20, 22, 24, and 26 are served by wireless service

mediums so as to communication with respective base stations 30, 32. See column 3, lines 21-25.

Li does not teach or suggest a communication between tiers occurring between two distinct sink nodes operating within different tiers. While some nodes in all tiers provide communication between tiers and may communicate with multiple nodes within their respective tier, these nodes typically communicate with only one node residing in a different tier. Accordingly, these nodes are referred to as sink nodes and are recited in independent claims 1, 5, 8, 15, and 20 as follows, “at least one of the first-tier nodes forming a first-tier sink node,” and “at least one of the second-tier nodes forming a second-tier sink node.” Li does not provide any description or suggestion in either the first tier of network 2 or the second tier of network 2 as including a first-tier sink node and a second-tier sink node.

In addition, as correctly recognized in the Office Action, Li fails to teach or suggest, “the second-tier sink node further capable of communicating with the first-tier sink node of said first-tier mesh,” as recited in independent claims 1, 5, 8, 15, and 20. Accordingly, the Office Action refers to Jones as providing such claimed recitations. However, as previously indicated, similarly to Li, Jones is silent as to teaching or suggesting, “at least one of the first-tier nodes forming a first-tier sink node,” and “at least one of the second-tier nodes forming a second-tier sink node,” as recited in independent claims 1, 5, 8, 15, and 20. The Office Action incorrectly contends that the user devices 20 and 22 of Jones are sink nodes.

Li and Jones do not teach or suggest, “the second-tier sink node further capable of communicating with the first-tier sink node of said first-tier mesh,” as recited in independent claims 1, 5, 8, 15, and 20. It is respectfully contended that a person of ordinary skill in the art, from the teachings of Li and Jones, would appreciate that the structure and functionality of a user device, such as user devices 20 and 22 of Jones, provide different functionalities and benefits from a first-tier sink node and a second-tier sink node as recited in the present invention. While some nodes in all tiers provide communication between tiers and may communicate with multiple nodes within their respective tier, these nodes typically communicate with only one node residing in a different tier, thereby these nodes are sink nodes.

In contrast, the user devices 20 and 22 of Jones and the base stations 30 and 32 of Jones are structurally distinct from the first-tier sink node and the second-tier sink node recited in independent claims 1, 5, 8, 15, and 20. Thus, Jones describes a very much conventional tree network and the base stations 30 and 32 of Jones are not capable of communicating directly between each other as the second-tier mesh nodes, but are merely conventional base stations, which communicate only up and down within the hierarchy, with the user devices 20 and 22 of Jones and the ATM switch of Jones. A combination of Jones and Li would not provide for “the second-tier sink node further capable of communicating with the first-tier sink node of said first-tier mesh,” as recited in independent claims 1, 5, 8, 15, and 20.



Independent claims 22 and 26 recite a first-tier sink node, independent claims 24 and 27 recite a second-tier sink node, independent claim 28 recites a method for a first-tier sink node, and independent claim 29 recites a method for second-tier sink node. Because independent claims 22-29 include similar claim features as those recited in independent claim 1, although of different scope, the arguments presented above supporting the patentability of independent claim 1 are incorporated herein to support the patentability of independent claims 22-29.

Accordingly, it is respectfully asserted that Li and Jones, individually or combined, fail to teach or suggest all the recitations of independent claims 1, 5, 8, 15, and 20-25 and related dependent claims.

### **CONCLUSION:**

In view of the above, Applicants respectfully submit that the claimed invention recites subject matter which is neither disclosed nor suggested in the cited prior art. Applicants further submit that the subject matter is more than sufficient to render the claimed invention unobvious to a person of skill in the art. Applicants therefore respectfully request that each of claims 1-10, 15-17, and 20-29 be allowed and, along with allowed claims 11-14, this application pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the Applicant respectfully petitions for an appropriate extension of time.

Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Alicia Choi", written over a horizontal line.

Alicia M. Choi  
Registration No. 46,621

**Customer No. 32294**  
SQUIRE, SANDERS & DEMPSEY LLP  
14<sup>TH</sup> Floor  
8000 Towers Crescent Drive  
Tysons Corner, Virginia 22182-2700  
Telephone: 703-720-7800  
Fax: 703-720-7802

AMC